

A description of the nest and eggs of the Madagascar Teal *Anas bernieri*

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The Madagascar or Bernier's Teal *Anas bernieri* is one of the world's least known wildfowl (Anatidae). Endemic to Madagascar and restricted to western coastal areas, this species has been observed or studied so infrequently (see Young *et al.* 1997) that it was at one time considered to be extinct and only re-discovered in 1969 (Salvan 1970, Andriamampianina 1976). *Anas bernieri* is the western-most representative of the grey teal (five species, see Ripley 1942, Marchant & Higgins 1990 and Young *et al.* 1997 for details of species limits). The grey teal have been linked traditionally with the New Zealand brown teal *A. chlorotis*, *A. aucklandica* and *A. nesiotis* in making up the "austral teal" (Delacour & Mayr 1945, Livezey 1991). This latter association may be misleading, however, brown teal being distinct in many aspects and probably not closely related to the grey teal (Johnson & Sorenson 1998, Daugherty *et al.* 1999). The eggs and nest of the Madagascar Teal have never been described. Only a single bird, a female, appears to have reached Europe alive, in 1927 (Delacour 1956), and this bird never laid. There is curiously, however, one egg in a European museum collection, with no accompanying details (Schönwetter 1967, Stephan *in litt.* 1997)(see below).

In 1993, as part of a wider conservation strategy for the Madagascar Teal, four males were captured at Lake Bemamba, western Madagascar, and exported to the Jersey Zoo, headquarters of the Durrell Wildlife Conservation Trust (Channel Islands, Great Britain)(Young *et al.* 1993). Four further birds, including two females, were captured at Bemamba in 1995 and sent to Jersey. The species first bred in captivity in 1998 (Young 1999). All captive birds are covered by a loan agreement with the government of Madagascar.

The majority of all observations, and the captures, of Madagascar Teal had been during the dry season (April – October) when there was no obvious nesting activity; since 1997 efforts to locate nesting pairs have been concentrated during the wet season (November – March). The first nest of *A. bernieri* was found in coastal mangroves at Lake Ambaratamaty, western Madagascar, in March 1997. Seven further nests have been found during the seasons 1998 - 2000 in mangrove forest close to the first site. In 1998, Madagascar Teal were reported nesting in mangroves at Ampasindava, north western Madagascar (Halleux 1998).

Nest sites

All nests located during the four nesting seasons 1997 – 2000 have been in holes in Grey Mangrove *Avicennia marina* above or close to water. Nest holes have been found 1-3 m above the water surface, and appear to be very vulnerable to human

predation, a view supported by other observers (A. Feistner pers. comm.). Madagascar Teal at Ampasindava are also reported to nest in tree holes (Halleux 1998). Here, stands of large *Avicennia* are not common in mangroves and all nests found have been in large trees (40 cm dbh).

In captivity, ten females, given a variety of potential nest sites, have nested exclusively in hole fronted boxes (entrance 9 – 10 m above the ground) or in a hollowed tree trunk (entrance 1 m above the ground). No birds have shown interest in thick pond-side vegetation nor in boxes at ground level.

No nest material has been found in wild or captive nests. Eggs are laid directly on the substrate and covered with rotting wood or shavings until the clutch is completed and nest down from the breast of the female is added. The female alone incubates.

All other grey teal species are predominantly hole nesters although ground nests have been recorded. Female Grey *A. gracilis* and Chestnut Teal *A. castanea* are able to make nests on the ground from available vegetation (Marchant & Higgins 1990). The preferred nesting site of the Sunda Teal *A. gibberifrons* is not recorded but captive birds have nested in boxes, and in ground vegetation. Andaman Teal *A. albogularis* are reported to nest mostly in trees (Phillips 1923), although both captive and wild (Finn 1921) birds have been recorded nesting on the ground. All species readily visit mangrove and other coastal forest, particularly Sunda and Andaman Teal.

Nest down

Nest down has been collected in captivity from all grey teal species. There is no obvious difference in down feather colour between Grey Teal, Andaman Teal and Chestnut Teal; all are grey with brownish centres. Down feathers of the Sunda Teal are a darker grey with less brown at the centre. In contrast, the down feathers of the Madagascar Teal are smaller, finer and a very pale grey colour with brownish centres.

Eggs

In 1998 (Jun – Jul) 19 eggs were laid in captivity (average clutch size ($n=3$) 6.3), both wild-caught females laying, and one re-laying after eggs were taken for artificial incubation. In 1999, 55 eggs were laid by four females hatched in captivity in 1998 (Apr – Jul) (full clutch size ($n=6$) 7.0) with a further 13 eggs laid by the two wild-caught females (Jun – Jul) (clutch ($n=2$) 6.5). In 2000 seven captive bred females laid 66 eggs (Apr – Jul) (full clutch size ($n=10$) 6.6) and one of the wild-caught females laid nine eggs in two clutches (Jun – Jul). Three addled eggs were taken from a nest in Madagascar in March 1997 (see Table 1).

Eggs were smooth, elliptical and pale fawny-buff to yellowish-buff in colour. Egg colour contrasts with the creamy or white eggs of *A. gracilis* (Frith 1982) and the other grey teal species (*castanea* (Frith 1982), *gibberifrons* (in captivity, Young pers. comm.) and *albogularis* (Delacour 1956)). The eggs were smaller than those of other grey teals (Table 1).

TABLE 1
Egg dimensions of grey teals, genus *Anas*

	Egg length x breadth; range (mean) Clutch; range (mean)	n	Source
Madagascar Teal (1) <i>A. bernieri</i>			
Egg LxB	40.6-49.8 x 32.4-37.6 (46.0 x 34.6)	160	Captive birds Jersey Zoo
Clutch	3-9 (6.75)	23	Captive birds Jersey Zoo
Madagascar Teal (2)			
Egg LxB	43.3-45.0 x 31.6-33.1 (44.1 x 32.4)	3	Madagascar
Grey Teal <i>A. gracilis</i>			
Egg LxB	49.0-58.0 x 35.0-42.0 (50.0 x 36.0)	126	Frith 1982
Clutch	6-11 (8.3)	54	Marchant & Higgins 1990
Chestnut Teal <i>A. castanea</i>			
Egg LxB	47.6-59.9 x 43.3-41.2 (53.0 x 38.0)	417	Marchant & Higgins 1990
Clutch	6-13 (8.8)	39	Marchant & Higgins 1990
Egg LxB	35.0-57.0 x 35.0-41.0 (52.0 x 37.0)	366	Frith 1982
Sunda Teal <i>A. gibberifrons</i>			
Egg LxB	44.4-54.0 x 33.4-38.8 (49.25 x 35.8)	109	Captive birds Jersey Zoo
Clutch	6-11 (8.3)	14	Captive birds Jersey Zoo
Andaman Teal <i>A. albogularis</i>			
Egg LxB	47.3-51.2 x 35.7-37.3 (49.0 x 36.3)	10	Schönwetter 1967
Clutch	10	2	Phillips 1923

Museum egg

Schönwetter (1967) listed one egg of *A. bernieri* in the Nehr Korn Collection (dimensions: 50 x 36 mm), with no details of its colour or texture. The egg is not listed in the first edition of the collection catalogue (Nehr Korn 1899) but it appears as *Nettium bernieri* in the second edition (Nehr Korn 1910: page 87) – there are, unfortunately, no details given of the egg's origin (Stephan *in litt.* 1997). In view of the large size of this egg, it is likely that it was not laid by a Madagascar Teal. The Nehr Korn Collection is today in the Museum für Naturkunde, Berlin.

The Australasian/Indonesian grey teal (*gracilis*, *castanea*, *gibberifrons*, *albogularis*) undoubtedly represent four very closely related taxa; indeed, *gracilis* and *castanea*, while morphologically dissimilar, are difficult to separate by courtship behaviour (Prawiradilaga 1985) or genetically (Sraml *et al.* 1996; Young *et al.* 1997; Daugherty *et al.* 1999). The initial data collected on the reproduction of the Madagascar Teal are further indications of the distinct nature of this endangered species.

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